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For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: PRODUCT AND METHOD

(57) Abstract: The present invention relates to oligonucleotide probes, for use in assessing gene transcript levels in a cell, which may be used in analytical techniques, particularly diagnostic techniques and kits containing the same.



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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/05102

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, SEQUENCE SEARCH

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/059271.A (GENE LOGIC INC.) 1 August 2002 (2002-08-01) SEQ ID NO:204	6
X	--- SHERLOCK G: "Analysis of large-scale gene expression data" CURRENT OPINION IN IMMUNOLOGY, CURRENT BIOLOGY LTD, XX, vol. 12, no. 2, 1 April 2000 (2000-04-01), pages 201-205, XP004257642 ISSN: 0952-7915 the whole document --- -/-	37

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

14 May 2004

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## INTERNATIONAL SEARCH REPORT

 ational Application No  
 PCT/GB 03/05102

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HEYER LAURIE J ET AL: "Exploring expression data: Identification and analysis of coexpressed genes" GENOME RESEARCH, COLD SPRING HARBOR LABORATORY PRESS, US, vol. 9, no. 11, November 1999 (1999-11), pages 1106-1115, XP002149915            ISSN: 1088-9051            the whole document</p>	37
A	<p>HARDY A J ET AL: "Double-case diagnostic for outliers identification" CHEMOMETRICS AND INTELLIGENT LABORATORY SYSTEMS, ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, NL, vol. 34, no. 1, 1 August 1996 (1996-08-01), pages 117-129, XP004037935            ISSN: 0169-7439            the whole document</p>	37
A	<p>ALIZADEH A A ET AL: "DISTINCT TYPES OF DIFFUSE LARGE B-CELL LYMPHOMA IDENTIFIED BY GENE EXPRESSION PROFILING" NATURE, MACMILLAN JOURNALS LTD. LONDON, GB, vol. 403, 3 February 2000 (2000-02-03), pages 503-512, XP002943414            ISSN: 0028-0836            cited in the application            page 510, column 1, paragraph 5 -column 2, paragraph 4</p>	37
A	<p>GOLUB T R ET AL: "Molecular classification of cancer: Class discovery and class prediction by gene expression monitoring" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 286, no. 5439, 15 October 1999 (1999-10-15), pages 531-537, XP002207658            ISSN: 0036-8075            cited in the application            the whole document</p>	37
A	<p>WASSERMAN W W ET AL: "Identification of regulatory regions which confer muscle-specific gene expression" JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 278, no. 1, 24 April 1998 (1998-04-24), pages 167-181, XP004453985            ISSN: 0022-2836            the whole document</p>	37

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/05102

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BRO R ET AL: "On the difference between low-rank and subspace approximation: improved model for multi-linear PLS regression" CHEMOMETRICS AND INTELLIGENT LABORATORY SYSTEMS, ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, NL, vol. 58, no. 1, 28 September 2001 (2001-09-28), pages 3-13, XP004318243 ISSN: 0169-7439 the whole document	37
A	US 2002/022222 A1 (SHARMA PRAVEEN ET AL) 21 February 2002 (2002-02-21) claims 1-15	37
A	US 2002/169560 A1 (MILLER BRETT ET AL) 14 November 2002 (2002-11-14) paragraph '0112!	37

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-5 and 7-36 (completely), and 6 (partially)

The subject-matter of independent claim 1 is fundamentally unclear in the sense of Article 6 PCT.

Independent claim 1 refers to a set of at least 10 oligonucleotides selected from the ones described in Table 1. However, a large number of the oligonucleotides "described" in said Table 1, which is composed of Tables 1a and/or 1b (description: page 6, lines 18-20), are merely referred to by a trivial name, e.g. I-01, and there is no further indication with regard to their sequences. Moreover, said clones appear to be random clones (description, page 59, lines 7-10). It is thus impossible to determine the scope of independent claim 1, which is hence fundamentally unclear (Article 6 PCT).

In addition, the subject-matter of independent claim 1 lacks conciseness in the sense of Article 6 PCT.

The subject-matter of said independent claim 1 includes an extremely large number of possible set of oligonucleotides. In fact, even without taking into account the fact that "derived oligonucleotides" and "functionally equivalent oligonucleotides" are also encompassed in its scope, this claim contain so many options, variables, and possible permutations that its scope could not be meaningfully searched.

The lack of clarity and conciseness, within the meaning of Article 6 PCT, of independent claim 1 arises to such an extent as to render a meaningful search of the subject-matter of this claim impossible.

The above-mentioned deficiencies under Article 6 PCT are also to be found in dependent claims 2 and 3, which refer to Tables 2 and 4, respectively, whereas said Tables 2 and 4 refer to a large number of oligonucleotides, some of them being merely described by a trivial name.

A meaningful search of the subject-matter of these claims is hence also impossible.

The subject-matter of claims 4, 5, 7-10, 13-24, and 28-36 depends, either directly or indirectly, on the subject-matter of claims 1-3 and do not further define the sets of oligonucleotides. The above deficiencies thus also apply for the subject-matter of said claims 4-10, 13-24, and 28-36. A meaningful search of the subject-matter of these claims is hence also impossible.

Set of oligonucleotides can also be found in Table 3. However, some of the therein-listed oligonucleotides could either not be found in any other Table, e.g. XI-8, or did not have a disclosed sequence, e.g. XV-94. A meaningful search on the sets of Table 3 is therefore also not possible.

In addition, the complete tables could also be considered as "sets of oligonucleotides". As noted above however, Tables 1a, 2a, and 4a contain

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

trivial names without further sequences.

Moreover, Tables 1b, 2b and 4b refer to sequences which are not disclosed in the application (see the footnotes) and could hence also not be completely searched.

No defined and searchable set of oligonucleotides could thus be found in the description, or in the examples.

A meaningful search restricted to specific sets of oligonucleotides disclosed in the application therefore also not possible.

Independent claims 11, 12 and 25-27 refer to polypeptides coded by the mRNA sequences to which an oligonucleotide of Table 1 binds. In view of the above-listed deficiencies, the subject-matter of independent claims 11, 12 and 25 is also considered to be fundamentally unclear in the sense of Article 6 PCT.

With regard to independent claim 6, it is noted that its subject-matter encompasses, among others, probes which are properly defined, i.e. defined by a searchable sequence of nucleic acids. The first searchable probe of claim 6, i.e. the probe I-24 having the sequence ID 308 and 373 nucleotides (SEQ ID NO:11), has therefore been searched.

Since the subject-matter of claims 1-5 and 7-36 is considered to lack clarity and/or conciseness within the meaning of Article 6 PCT to such an extent as to render a meaningful search of the subject-matter of these claims impossible, the international search report has been limited to the subject-matter of the only claim considered to be clear enough to be searched, i.e. independent claim 37 (completely) and independent claim 6 (partially).

It is to be noted that the non-limiting feature "preferably as described herein-before" recited in independent claim 37 has been ignored in view of the objections presented herein.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 03/05102

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-5 and 7-36 (completely), and 6 (partially)  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/05102

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0259271	A	01-08-2002	WO 02059271 A2	01-08-2002
US 2002022222	A1	21-02-2002	AU 7222698 A	24-11-1998
			EP 0979308 A1	16-02-2000
			JP 2001526534 T	18-12-2001
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